Mastery Assessment of Unit 2 (Practice version 108)

Question 1

Let f represent a function. If $f[38] = 50$, then there exists a knowable solution to the equation below.

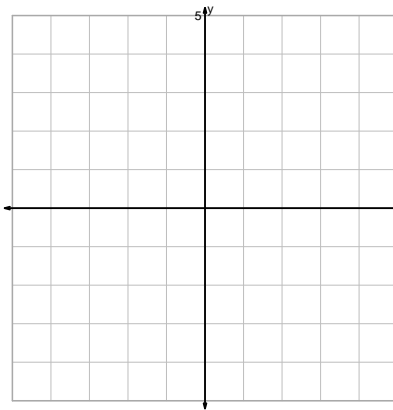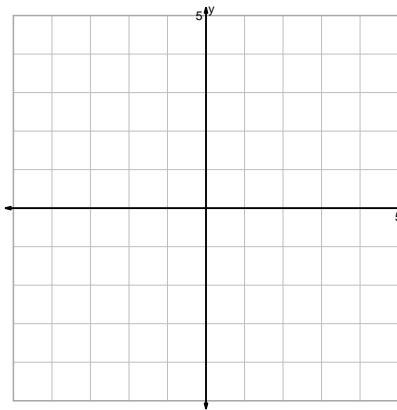$$y = \frac{f[2x - 34] + 46}{24}$$
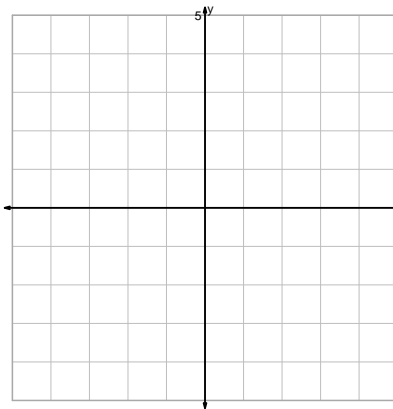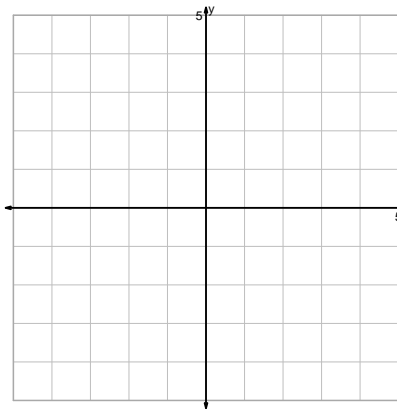
Find the solution.

$x =$

$y =$

Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.
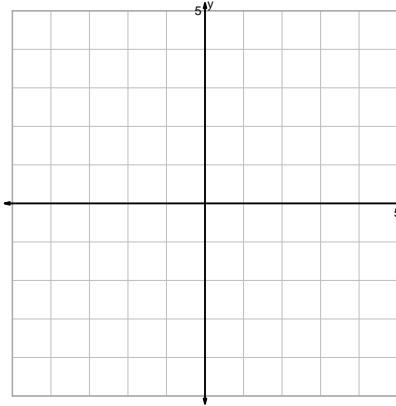
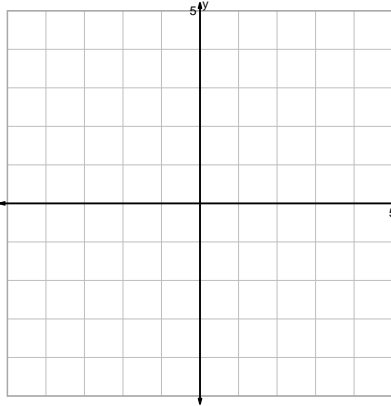$y = 2^{2x}$

$y = -\log_2\left(x\right)$

$y = x^2 + 2$

$y = \sqrt[3]{\dfrac{x}{2}}$
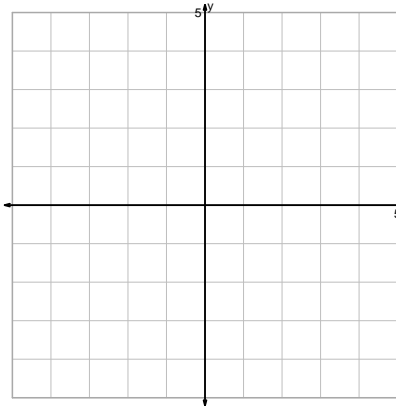
$y = \sqrt{-x}$
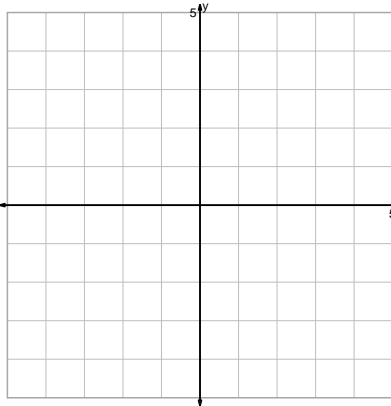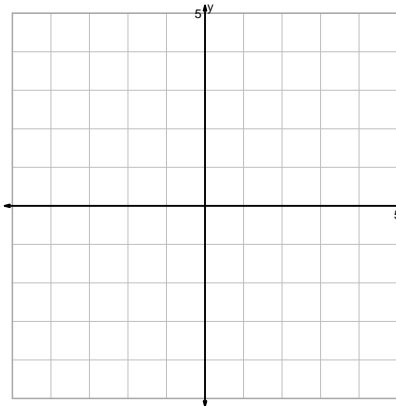
$y = \sqrt{x-2}$

$y = x^3 - 2$

$y = \dfrac{\sqrt[3]{x}}{2}$

$y = 2 \cdot x^3$

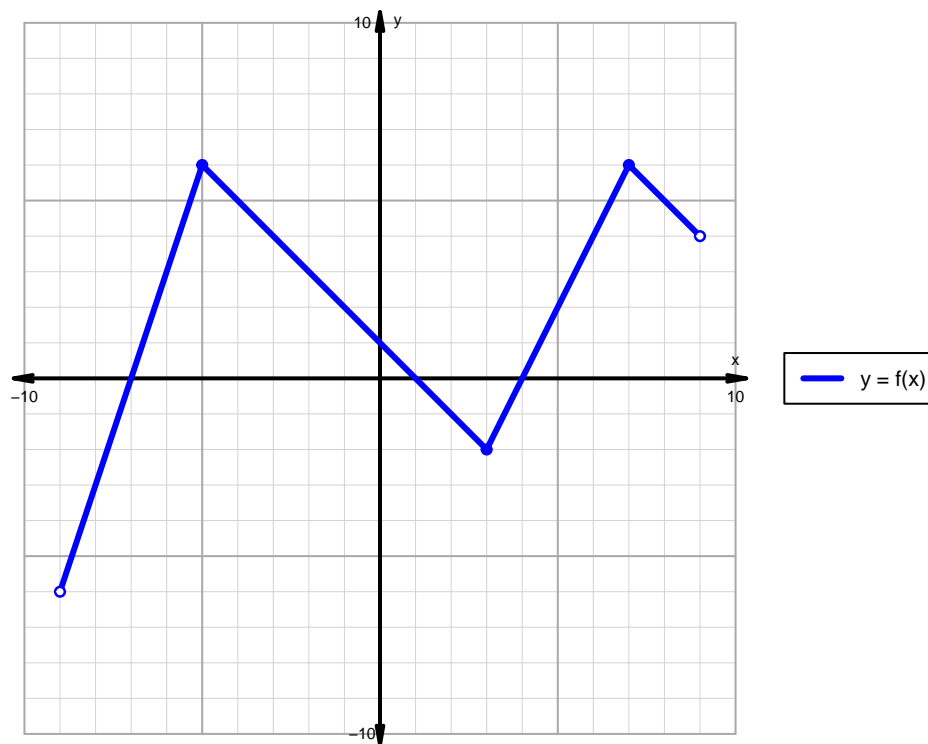$y = \left(x+2\right)^2$
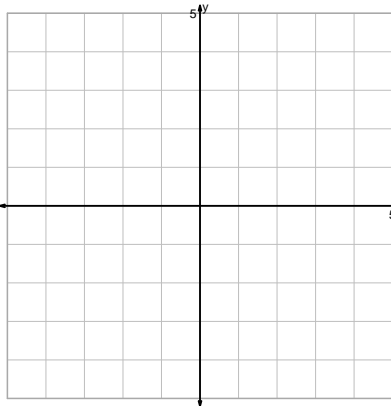
Question 3

A function is graphed below.

10 y

−10

x

10

−10

y = f(x)

Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

3

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f[2x+5]}{3} - 6$ are represented below in a table and on graphs.

a	b	x	y
-45	12	-25	-2
3	21	-1	1
9	-99	2	-39
37	-96	16	-38

$b = f[a]$

$y = \dfrac{f\left[2x+5\right]}{3} - 6$
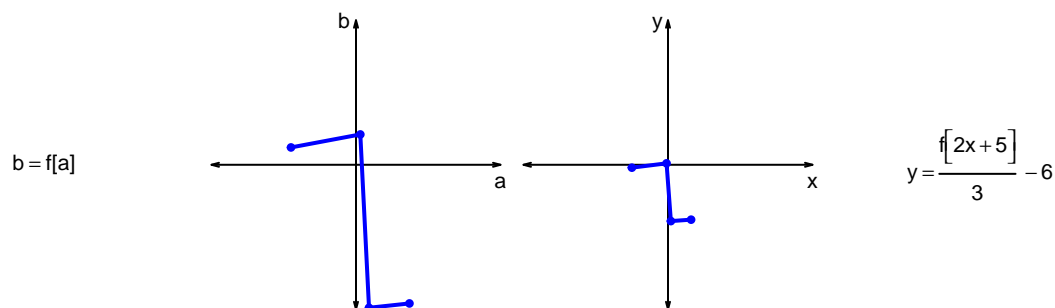
a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f[2x+5]}{3} - 6$?

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Question 5

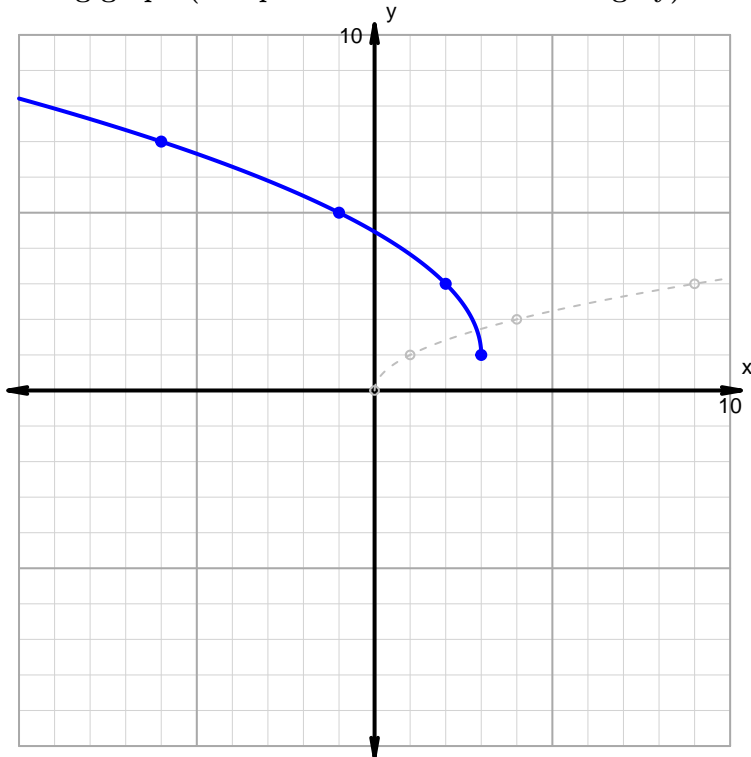A parent square-root function is transformed in the following ways:

Horizontal transformations

1. Translate left by distance 3.
2. Horizontal reflection over y axis.

Vertical transformations

1. Vertical stretch by factor 2.
2. Translate up by distance 1.

Resulting graph (and parent function in dashed grey):

- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y = \frac{1}{3} \cdot |x - 1| - 2$$

Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	